Meeting of the
Board of Medical Control
BLOOD TRANSFUSION BETTERMENT ASSOCIATION
January 8, 1941 4:00 p.m.

Present: Dr. Stetten in the Chair

Dr. Bolduan	Dr. Rhoads	Dr. Corwin
Dr. Levine	Dr. Rosenthal	Dr. Drew
Dr. MacNeal	Dr. Stetson	Dr. Katzin
Dr. Ottenberg	Dr. Unger	Dr. Scudder

By invitation: Dr. Thalhimer
Dr. Robinson, Director of the anti-toxin laboratories for the State of Massachusetts
Dr. R. Heffron, Associate Medical Director of the Commonwealth Fund

Minutes

It was voted that the minutes of the last meeting be approved as circulated.

Report on the Status of the Plasma for Britain Project

Dr. Drew presented the following report of the work done since the last meeting on November 29th:

At the meeting of the Plasma Committee on December 11th, we were authorized to do three things:

1. To advise Dr. Drury that further shipments of plasma would be withheld until reports had been received from him concerning the condition of the plasma prepared and shipped after the instigation of a more controlled technique by the Association.

2. To advise the American Red Cross to withhold all shipments of plasma until further word from the Plasma Division.

3. To investigate the possibilities of filtration on a large scale should it be found that the plasma being prepared under the new system was continuing to arrive in England unfit for use.

In following out this program Dr. Drury was cabled in the name of Dr. Stetten as follows:

"Holding all shipments of plasma pending your bacteriological report on shipment SS CAMERONIA November 4"

The carton numbers of the shipment were given. On December 19th a cablegram addressed to Dr. Stetten was received from Dr. Drury as follows:

"Shipment CAMERONIA random samples amounting to 4% of total shipment tested and found sterile. Appearance on inspection much more uniform."

On the same day the following cable was sent to Dr. Drury:

"Thanks, cable 19th good news to us. Are releasing 1,000 liters today. Will continue shipping."

After a conference with the members of the Plasma Committee we were authorized to advise the American Red Cross that shipments might be resumed and on the same day, December 19th, Mr. George C. Smith, of the American Red Cross, was advised by Mr. Davidson to release a total of 354 liters of plasma saline solution. The rest of the thousand liters to be distributed between two or three later ships. This was felt advisable so that in case of loss of a ship, the plasma loss would not be so great.

Since the plasma arriving in England is apparently suitable, it was felt that no attempt should be made to filter the large quantity in the storehouse at that time.

At the meeting of the Board of Trustees on December 19th, Mr. Bush reported that following his meeting with Mr. DeWitt Smith in Washington on December 16th, they both had agreed that it was advisable to get in direct touch with Dr. Mellanby in order to ascertain whether or not the project should be continued after January 1st. To that end the following cablegram was sent on December 17th:

"Pursuant your letter to Scudder October 25th, we plan to stop bleeding January 1st. Last shipment February 1st. Cable if further need is evident."

There being no answer to this cable during the next week, another cable was sent on December 23rd to Sir Edward Mellanby in the name of Mr. Bush, as follows:

"No answer our cable 17th. Cable whether we are to continue after January 1st."

On December 27th, a cable addressed to Mr. Bush was received from Sir Edward Mellanby as follows:

"Unnecessary to continue bleeding after January 1st."

This information was transmitted to the various members of the Plasma Committee and to Dr. Stetten. Since it was obvious that the plasma for Britain program was to be brought to a close, and the necessity for continuing the program in order to complete certain experimental work already begun; in order to maintain a staff which could be immediately used in case of need by the National Defense Council, and in order to perfect a system for large scale, safe handling of blood and plasma, a program was drawn up by Mr. Bush, Mr. Voorhees and the Plasma Committee for presentation to the American Red Cross requesting:

1. That this project be continued for an additional three months beginning February 1st, and that the American Red Cross provide 500 donors per month during this period. The blood from these donors is to be processed as plasma or serum for use in the research program already outlined or stored for emergency use in national catastrophes or for later use by the armed forces.

2. The American Red Cross should make available funds for the setting up of a central laboratory in order to test out ideas born of the experience of this Association in its work to date before final recommendations to the National Research Council are made.

3. That funds be requested from the Commonwealth Fund for the sending of a Commission to England to survey the methods of collection, preparation and distribution of blood substitutes under actual war conditions.

In order to facilitate the rapid carrying out of this proposed program Mr. Bush asked Dr. Sturgis, of Ann Arbor, Chairman of the Subcommittee on Plasma of the National Research Council; Dr. Cannon of Harvard, Chairman of the Committee on Blood Substitutes and Treatment of Shock; Mr. Barry Smith, Director of the Commonwealth Fund and his associate Dr. Roderick Heffron; Dr. Stetten, Dr. Rhoads, Mr. Voorhees, Mr. Davidson and I, to meet at the Presbyterian Hospital on December 30th.

Mr. Barry Smith seemed favorably disposed toward the proposition of supplying funds for the survey group to England. He made his final decision dependent on the opinions of Dr. Rhoads, Dr. Cannon , Dr. Best, and Dr. Sturgis, as well as those of his medical associates of the Commonwealth Fund. Dr. Rhoads and Dr. Cannon both stated that they were in favor of the project, but the eventual disposition of this part of the program would seem to depend on the report from Dr. Best and possibly on the expression of opinion by Dr. Weed of the National Research Council.

Dr. Sturgis on his return to Ann Arbor immediately wrote to Dr. Cannon, Commander Stephenson and Dr. DeKleine, stressing the importance of continuing the work of the B.T.B.A. for a period of at least three months. I quote in part the letter to Dr. Cannon:

> "I am exceedingly anxious that the Red Cross continue to supply donors to the B.T.B.A. at the rate of 500 per week for the next three months. I think this is highly essential to the development of the work of my committee, as this Association is working out some of the most important, practical aspects of collecting, processing and administering blood and blood substitutes. I hope, therefore, that you will use all of your influence to convince the Red Cross that they should continue their support of the B.T.B.A. in New York."

On January 6th, Mr. Voorhees, acting for Mr. Bush in his absence, received a letter from Mr. DeWitt Smith which said, in relation to this particular problem, the following:

> "I will write you in the near future in a separate letter about the possibility of continuing the project either along the lines of your memorandum of December 30th, or some agreed upon modification thereof.

As I told Mr. Bush, Chairman Davis is most definitely interested in view of the necessity of our being prepared to meet possible requests from the Army and Navy. However, since the meeting in New York which formed the basis of your memorandum, there have been a number of conferences with Dr. Reed and others here representing the National Research Council, so that I think the plan finally agreed upon may not be entirely in line with your tentative suggestion of December 30, 1940."

As things stand now the future of the Plasma Division of the organization is an unknown quantity. The question of a survey in England likewise remains unanswered.

STATISTICS

It is pleasing to note that in the reports for November, the figures showed less than 3% of the plasma was lost from all causes. In December, reports show that there has been only one contaminated pool in the hospitals to date.

The following are figures compiled up to and including December 30, 1940:

Total Bookings up to and including December 30, 1940 - 17,097

Total SENT to hospitals up to and inc. 12/30 -	15,234
Total ADDED BY " " " " " "	1,382
Total LAPSED AT " " " " " "	2,256
Total NOT TAKEN at" " " " " "	699
Total TAKEN " " " " " " "	13,661
Total NOT ACCEPTABLE " " " " "	141

Total number of cards sent Red Cross up to and including December 31, 1940 - 12,966

Summary up to and including 12/30/40

HOSPITAL	SENT	ADDED BY HOSPITAL	LAPSED	NOT TAKEN	TAKEN	ACCEPTABLE
Presbyterian	4,136	390	590	185	3,751	42
Mt. Sinai	2,995	380	484	65	2,826	16
New York	1,892	67	189	116	1,654	16
Post-Graduate	2,436	222	416	93	2,149	30
L.I.C.H.	1,294	130	228	61	1,135	22
Lenox Hill	802	74	140	44	692	8
Joint Diseases	839	71	94	78	738	4
Jewish	105	9	18	5	91	1
Memorial	735	39	97	52	625	2
TOTALS	15,234	1,382	2,256	699	13,661	141

MONTHLY RECORD

PLASMA SALINE SOLUTION RELEASED TO THE AMERICAN RED CROSS

By Liters

	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL TO DEC. 31st
Lenox Hill	-	-	-	42	72	114
Long Island College	-	-	90	101	126	317
Memorial	-	-	42	114	42	198
Mt. Sinai	-	24	162	300	324	810
New York	-	-	42	198	84	324
Post Graduate	-	-	18	270	168	456
Presbyterian	21	156	222	324	258	981
Joint Diseases	-	-	-	78	54	132
	21	180	576	1,427	1,128	3,332

PLASMA SALINE SOLUTION ON HAND AT PETTIT & REED

as of December 31, 1940

LENOX HILL	36,000 cc
LONG ISLAND COLLEGE	126,000 cc
MEMORIAL	-
MOUNT SINAI	276,000 cc
NEW YORK	162,000 cc
POST GRADUATE	174,000 cc
PRESBYTERIAN	240,000 cc
JOINT DISEASES	30,000 cc
	1,044,000 cc - 1,044 liters

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One letter from Dr. Drury seems worthy of reporting at this time. It was written on December 3rd:

Dear Doctor Drew:

I was glad to get your letter of November 14th, 1940. By this time I expect you have received my second cable, and I have received the cable indicating the cartons, etc., which should be discarded. I have had a preliminary report on the tests of random samples of later shipments (I cannot give you at the moment dates of bleeding) and it looks as if they will prove sterile. When I get the detailed reports, I will let you have them.

All the plasma, on arrival, is going to the National Institute for Medical Research, to Dr. Bruce White. He will examine each bottle microscopically and test random samples for sterility. His reports will be forwarded to you.

Sir Edward Mellanby wrote on the 25th October, 1940 to Dr. Scudder, saying that if you could bleed at your present rate till the end of January, 1941, we should by that time be self-supporting, and it would be no longer necessary for you to continue this excellent service.

I will endeavour to carry out investigations which will decide the value of plasma saline in air raid casualties. The difficulties of this type of work are very great, as there is no knowing at what place or hospital the casualties will arrive, but we are endeavouring to set up the necessary machinery.

I can only add that your cooperation is of great help to us at this time, and if there is anything we can do to make this work useful to you, I hope you will ask me.

Again thanking you and all your associates for the time and trouble you must all be putting into this work.

Yours sincerely,

(Signed) A.N. Drury

Of equal interest is a letter written on December 4th by Dr. Drury to Dr. Best in which he states:

> "We have had good results with serum, the reactions in 202 reported transfusions being 34, practically all mild or very mild. We stick to serum as it is so much easier to keep sterile than plasma, can be Seitz filtered easily, and you get more protein for the same volume of fluid withdrawn. I shall send you a detailed account of our process at Cambridge. I am wondering how you are going to handle your dried product in bulk and how you are going to pack it. Experience has taught us that 400 - 500 cc is the smallest dose likely to do good in shock with severe trauma, so that would make a good unit, (better than ours which is 200 cc). The question of bulk handling is not easy if sterility is to be maintained. I see no evidence to suggest that there will be any difference between the clinical value of dried serum, liquid serum, and liquid plasma, and unless anything unforeseen turns up, I believe liquid and dried serum will prove to be our main standby. The advantage of liquid plasma which has been so often stressed, namely, that it can be got from the blood banks, seems to be of little import in the stress of air raids. We keep our blood banks as low as possible, try to give the hospitals an emergency supply of liquid plasma and tell them to ring up for blood from the Depots as they want it. Liquid serum is just undergoing a clinical trial but as air raids on London have been mild lately, we have not had much chance to try it, but on the few cases it has been tried, it has done just as well as plasma.
>
> (signed) A.N. Drury

Of some interest also is a note on a Christmas card from Miss Sheila Dwyer, one of the nurses with the American Unit at Basingstoke, Nants, England, in which she states:

"We are using American Plasma sent over by the Red Cross. Keep it coming."

FACILITIES FOR THE COLLECTION OF BLOOD AND THE PREPARATION OF PLASMA IN THE LARGER CITIES

Mr. DeWitt Smith, of the American Red Cross, has requested that this Association suggest a program which might be quickly carried out for the bleeding of 100,000 donors should this amount of blood be asked for by the United States Navy.

Before submitting any such scheme it was felt advisable to get first hand information concerning the blood banks and plasma banks now in operation in the larger cities of the United States. It was felt that such set-ups would be the most logical centers around which to rapidly build a national organization. To that end on December 20th, a letter was sent to key individuals in the following cities:

Boston	Chicago	St. Louis, Mo.
Philadelphia	Detroit	New Orleans
Baltimore	Cleveland	San Francisco
Washington, D.C.	Cincinnati	Los Angeles

in order to ascertain what facilities each of these cities offered which might be used at an early date for the collection of blood and the processing of plasma. To date answers have been received from the following:

SAN FRANCISCO - Dr. John R. Upton, Secretary-Treasurer of the Blood Bank of the San Francisco County Medical Society writes as follows:

"At the present moment there is only one small blood bank in San Francisco and that is out in the San Francisco County Hospital. In view of this, and due to certain physical factors which make enlargement of this bank somewhat difficult, approximately three months ago I cast about for a site which would be desirable for us to use in connection with our dried plasma project of the British War Relief Association. The site was found and we should have the plant working by the end of January. I had collected a rather large sum of money, enough to see me through my first year of running, when I heard that our San Francisco County Medical Society had appointed a committee of three to study blood banks, but due to lack of financial assistance no progress had been made. We joined forces, my cash and their rooms, and the result is we have engendered a lot of enthusiasm that only needed the spark. The San Francisco County Medical Society bank will run as a non-profit organization and we have appointed four top laboratory men to help us so that we can more than pass the strict requirements laid down by our Board of Health Department."

"The above two blood banks are the only two in San Francisco. One feeds the large County Hospital, the other will be run as a non-profit blood

bank for San Francisco and the Bay Area. Naturally I shall be happy to cooperate with you to the fullest."

LOS ANGELES - Dr. P. Berman, Chief of the Medical Service of the Los Angeles County Hospital, summed up the facilities in Los Angeles as follows:

"To my knowledge the only blood bank operating in this area is the one located at the Los Angeles County Hospital. We take care of approximately 4800 blood transfusions a year and have equipment for drying of serum and plasma if necessary."

"There is a commercial laboratory in Los Angeles, The Hyland Laboratories, 4524 Sunset Blvd., (Dr. Clarence Michael Hyland) where plasma and serum are manufactured for one of the pharmaceutical houses in California; but they do not operate a blood bank and do not sell blood for transfusion."

"Dr. A.M. Zeiler of the firm of Zeiler, Hammack, and Maner, 657 So. Westlake, a commercial laboratory in Los Angeles doing a great deal of blood transfusion work, states that they are equipped to prepare serum and plasma and take care of 100 donors a day on short notice."

ST. LOUIS, MO. - Dr. Evarts A. Graham of the Washington University writes as follows:

"I am inclined to think that the present facilities are not adequate but that they can be made so by arousing the interest of various groups of people here in the city. There is in existence a volunteer donors' organization. I am sending your letter to Dr. Frank Bradley, Superintendent of the Barnes Hospital and shall ask him to communicate with you directly."

CHICAGO - Dr. Sidney O. Levison, Director of the Samuel Deutsch Convalescent Serum Center, writes as follows:

"The Samuel Deutsch Serum Center at Michael Reese Hospital has engaged in serum and plasma preparation for general distribution both in the city and in the state. Our facilities are quite adequate to process several hundred units per week. This could undoubtedly be greatly amplified if there were funds to increase the equipment which is needed in this work."

"The only blood bank of any size or consideration in the City of Chicago is the one that is conducted at the Cook County Hospital. There are a few small blood banks in some of the smaller hospitals, and we stock a small supply of the preserved blood, but I do not believe that any of them are of a size to warrant consideration for a program such as you are carrying out in New York."

We have been in communication with Dr. Schirmer of the Cook County Hospital but to date no answer has been received.

NEW ORLEANS - Dr. Alton Ochsner, of Tulane University, writes as follows:

"We have not had in New Orleans a blood or plasma bank but at the present time such is being started at the Charity Hospital. Dr. M.E. DeBakey will probably be in charge of it."

CINCINNATI - Dr. Mont R. Reid of the University of Cincinnati and Chairman of the Blood Transfusion Service, writes as follows:

"The Cincinnati Chapter of the American Red Cross is operating a very efficient blood transfusion service in this city. It is located at the Cincinnati General Hospital and is directed by Dr. Paul I. Hoxworth. I believe that it is the most efficiently run service of this type that I have seen. We have not yet gone into the preparation of wet and dried plasma but our plans are all drawn up for this purpose. I know of no place which has access to such a large volume of blood as we have here and I am sure that if the occasion arises we could cooperate most satisfactorily with the B.T.B.S."

WASHINGTON, D.C. - Dr. Edgar A. Bocock, Supt. of the Gallinger Municipal Hospital, writes as follows:

"According to available information blood or plasma banks are conducted in Washington by the following:

1. Gallinger Municipal Hospital
2. Providence Hospital (small plasma bank)
3. Emergency Hospital
4. Children's Hospital

"The latter three are probably limited in extent.

"The bank at Gallinger Hospital has been in service actively for several years and in the past year has been transformed almost completely into a plasma bank, and that material is now being largely used in place of whole blood.

"I feel that with the already existing satisfactory nucleus on hand at this institution it would not be difficult to expand into a plasma station that could be readily made available for the collection and preparation of large quantities of this material.

"We have a staff of very well-trained individuals who probably have done as much or more along the lines of plasma utilization than any other similar group in the country. I refer to Drs. Charles Stanley White and Jacob Weinstein, who since its inception have been charged with the conduct of the blood bank here.

"I assure you that this institution stands ready to cooperate very fully with your organization and the American Red Cross in the event a movement is commenced looking toward the establishment of a collecting station in the Capital."

BOSTON - Dr. Elliott C. Cutler, of the Harvard Medical School, writes as follows:

> "We have had in Boston recently a meeting concerning the establishment of a common blood bank and have agreed that at the major hospitals here blood will be collected and then forwarded to the State Anti-toxin Laboratory for safe keeping and dissemination. The man in charge of this work at the Peter Bent Brigham Hospital is Dr. Carl W. Walter." Dr. Robinson is Director of the Laboratory.

BALTIMORE - Dr. Winford H. Smith, Director of the Johns Hopkins Hospital, writes as follows:

> "There are only two blood banks in Baltimore, one at the University of Maryland Hospital and the other at the Johns Hopkins Hospital. Neither of these would be prepared to take on the work you suggest without additional equipment and apparatus. If, however, it were made possible for these institutions to install such additional equipment, I am sure that either or both of them would be glad to cooperate. The space for such a laboratory at the Hopkins is very limited. If it were desired to set this up on a fairly large scale, I imagine the University of Maryland Hospital could handle it better because they have a new laboratory building with a good deal of space unallocated at the present time."

We have asked Dr. R.H. Bishop, Medical Director of the University Hospital in Cleveland; Dr. R.D. McClure, Surgeon in Chief of the Henry Ford Hospital, in Detroit; Dr. Elizabeth Helene Schirmer of the Cook County Hospital in Chicago; and Dr. Wims C. McGuiness, Director of the Philadelphia Serum Exchange, for a report on the facilities in their respective cities and have no doubt they will be in at an early date. Their replies should make fairly complete the information on the facilities for immediate operation in the larger cities of the country. Since there are all large medical centers in each of these places it is felt that they would represent the centers most likely to be conversant with modern methods of collecting, storing and processing human blood. A plan has been drawn up and presented to members of the Plasma Committee which would utilize facilities in ten cities for the collection of 100,000 donors over a period of six months. The work would be built around units capable of handling 500 bloods per week, that is 100 bloods a day for five days a week. At this rate 20,000 bloods could be collected each month for five months to make a total of 100,000.

This presupposes that instructions detailed enough to start each of these units into actual production at the end of one month's preparation could be supplied to them by this organization so that the total lapse of time would be six months. One month for preparation and five months of actual collection.

A fairly accurate estimate of the amount of equipment and personnel required to run one such unit or multiples of such units is in the process of being worked out. At the present time the ideal processing plant seems to be a centralized unit capable of handling 100 bloods a day; capable of doing the necessary bacteriological studies; preparing the apparatus for re-use; typing the bloods; separating the cells from the plasma; pooling the plasma; clarifying the pools;

and filtering before final dispensation into the containers for use in the liquid form or for drying by an acceptable method.

To the end of accomplishing as soon as possible the building of an idealized central laboratory here in New York, four steps have been taken:

1. A DeLaval Centrifuge Milk Separator has been requested for trial and experimentation in order to discover whether a modification in it might be made which would make it usable as a separator of blood and plasma. This machine is to be supplied at no cost to the Association, except the minor cost of shipping charges. (This centrifuge is to be sent to the Memorial Hospital for testing by Dr. Rhoads and Mr. Folsom.)

2. A DeLaval Blood Separator of the type now being used in one of the larger packing companies for the separation of cattle blood has been ordered, under a guarantee that it will separate human cells from human plasma without causing hemolysis. (This centrifuge is to be set up in the central laboratory when the site has been determined.)

3. Through arrangements with the American Red Cross a No. 20 silver-plated Seitz Filter, ordered by the British Red Cross, is to be delivered to this Association for testing in order that a report might be made to the American Red Cross and through them to the British Red Cross as to the advisability of purchasing 11 more. (This filter is to be turned over to Dr. Unger for testing.)

4. A block tin-plated No. 20 Seitz Filter has been ordered by this Association as a part of the equipment necessary to complete the central laboratory set-up. This will be set up in conjunction with the blood separator at the site to be determined by this board.

It is hoped that after the use of these pieces of apparatus is established as a practical working unit the process recommended will be somewhat as follows:

1. The collection of bloods in the individual hospitals as it is now being done.

2. The delivery of such blood to the Central Laboratory by American Red Cross Ambulance Units, when the typing and serology reports have been made in the individual hospitals.

3. The pooling of all bloods of like types in the central laboratory - that is, all A's will be pooled into one batch, all B's etc., It is felt that this procedure is superior to that carried out by the English in their two plasma centers at this time. They pool all bloods in order that the plasma which is obtained will be free from agglutinins, but it is practically impossible to pool whole bloods of different types without getting the production of isohemolysins and without some hemolysis.

4. The pooled bloods are arranged consecutively.

5. The separator centrifuge adjusted so that the cells will be thrown out of the lower bowl as a waste product while the clear plasma is thrown out of the upper outlet into

6. A second centrifuge separator so regulated that the fat and fibrins will be whirled out of the upper opening while the somewhat clarified plasma will this time be discharged through the lower opening which is aseptically connected to

7. A plasma pooling flask where the plasma of all groups is collected for the purpose of suppressing the agglutinins.

This is a convenient place for a break in the series of steps but ideally this process should continue through

8. A clarifying Seitz filter and through this to

9. A Seitz bacterial filter, from here through

10. A fine filter of diatomaceous earth or spun glass to remove any possible shreds of asbestos before the final product is run into

11. Dispensing bottles for shipment or containers which might be immediately attached to

12. A drying apparatus for the preparation of dried plasma.

There is evidence from several sources both in this country and in England that such a set-up will work. It offers many advantages in the form of safety, speed and efficiency but must be built and proved to be practical before it could be recommended as the ideal set-up for use in the other cities.

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A POSSIBLE SITE FOR THE ERECTION OF THE CENTRAL LABORATORY

It has been felt that the central, ideal or "pilot" laboratory should be set up independent of any of the hospitals associated in this particular work, in order to work out from scratch the problems of space, equipment, personnel, cost and efficiency. Three possible sites have been suggested, they are:

1. The Napp Hospital at 58th Street and 10th Avenue - the property of Columbia University.

2. The Manhattan Convalescent Serum Laboratory in the William Parks Laboratory associated with the Willard Parker Hospital.

3. The laboratory of the "Donor Bureau" at 39 East 78th Street.

Each of these three possibilities has been investigated. The Napp Hospital has been recently leased to a private corporation so that its facilities are not available.

When the Manhattan Convalescent Serum Laboratory was proposed, the question of its coming under the domination of the City Government was raised. After a conference with Dr. Muckenfuss and Dr. Thalhimer these facts were ascertained:

The Serum Laboratory functions as an independent corporation under the Health Research Fund, Inc. Its relationship to the city laboratories is almost identical to the Plasma Division's relationship to the Academy of Medicine insofar as the allotment of space for activities is concerned. Monies of the Health Research Fund are donated to a large degree by private philanthropies, though there is some return on the products of the laboratory which add in making it practically self-sustaining. It is the policy of the city laboratories as a whole to frown on any attempt to patent, commercialize or in any other way aggrandize any particular individual who happens to be working in the set-up. While the space problem in Dr. Thalhimer's laboratory is one which will require careful planning the facilities for cleansing apparatus, for doing bacterial cultures, for refrigeration and storage and for processing under good conditions, are probably the best in this vicinity.

If permission could be obtained from the Department of Health, it seems quite probable, and Dr. Thalhimer could be persuaded to increase his present load of work, which seems possible, this site seems the best of the three. Arrangements could be made to handle all salaries, accounts, personnel, appointments, etc., through the B.T.B.A. so that it would not in any way become a part of the City or the Manhattan Convalescent Serum Laboratory.

The "Donor Bureau" situated in an apartment house has adequate space for the creation of such a laboratory if it were turned over entirely to this purpose. After a discussion with Dr. Katzin and Mrs. Adams of the Donor Bureau, it seems that the possibility of carrying on both projects in that location is not too good because of lack of adequate equipment there at the present time. To properly prepare it for use would require the installation of a complete large autoclaving unit, a complete large drying unit, additional washing facilities in the form of sinks, tubs and tables, some system for preparing rather large quantities of sterile distilled water, an increase of approximately 150 cubic feet of ice-box space, facilities for doing approximately 250 cultures per week and storage space capable of maintaining in rotation 2,000 phlebotomy sets at all times. This would require a considerable outlay in funds at this time.

The thing which can be kept in mind however is that should the B.T.B.A. decide in the future to make the processing of plasma and its distribution a part of its permanent function it seems wise to consider at this time the possibility of setting up a relatively permanent central laboratory where both the functions of the plasma division and the donor bureau may be carried on concurrently.

Of the three therefore it seems that the most logical place at this time for the set-up of the central laboratory would be in the laboratories of the Manhattan Convalescent Serum Center.

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It was voted that this comprehensive report be received and incorporated in the minutes.

Report on Conference in Washington attended by Dr. Rhoads

Dr. Rhoads reported that he was just back from Washington where he had met with Dr. Weed, Chairman of the National Research Council; Dr. Cushing, his assistant; Dr. DeKleine of the Red Cross; Colonel Munley of the Army and Commander Stevenson of the Navy, and was informed that the Surgeons General of the Army and the Navy had requested the National Research Council to provide as much plasma as can be obtained in as brief a time as possible. He said they had specified that the Red Cross was to provide the donors and finance the facilities for bleeding.

It had been suggested that the "pilot plant" recommended by the Blood Transfusion Betterment Association should take the form of a single unit with paid personnel, to be established in New York City. It would be expected to bleed at the outset not more than 160 to 200 donors daily.

It was then planned that the Red Cross would arrange for the shipment of whole citrated blood. All processing would be done by the Sharp and Dohme Company of Philadelphia, and shipments were to be made in amounts up to the capacity of their centrifuges, which are at present capable of handling 160 bloods per day.

Commission to England

Relative to sending a commission to England to survey the methods of collection, preparation, distribution and use of blood substitutes under actual war conditions, Dr. Rhoads reported that he had learned that the State Department would not grant passports for such a purpose; the Red Cross did not approve of the project; furthermore, it was stated that "The need is too great to allow delay, and there are too many observers in England already."

Experimental Program and Central Laboratory

Dr. Rhoads reported that the Red Cross had indicated willingness to supply donors for the experimental program of the B.T.B.A. and that the National Research Council had indicated willingness to finance this experimental program to the extent of $8,000.

It was voted to recommend to the Board of Trustees that if the experimental program is to be continued, it be done at the Manhattan Convalescent Serum Laboratory because of Dr. Thalhimer's competence and experience and because of the available facilities and the need of but minimum investment for additional equipment.

Dr. Thalhimer said that he "would be only too glad to undertake this" and that he would submit the plan to Dr. Muckenfuss and Commissioner Rice for their approval.

It was also voted to recommend to the Board of Trustees that the unexpended balance of the $5,000 allocated by the B.T.B.A. for research be used for the purchase of equipment necessary for carrying out the program.

Dr. Katzin's Report

Dr. Katzin reported that two or three years ago, the Donor Bureau would occasionally be sent blood from obstetrical cases for which the individual hospitals had been unable to obtain compatible donors. In one such case (Ceno) it was Dr. Stetson's keen observation that this blood was apparently incompatible with that of any of the donors of the same blood group. Some 60 men of the same blood group were therefore matched and of these only three were found to be compatible. Transfusions from these men were perfectly uneventful whereas a previous transfusion from the patient's husband in the same blood group had led to transfusion shock and characteristic sequelae. In another instance of infected abortion it was possible to find but three compatible donors in the same blood group after matching 54 donors. With the discovery of the RH factor (Landsteiner and Wiener), Dr. Levine, working under a grant from this Association, showed a parallelism between the instances of this factor and the immune agglutinin in the serum of these cases.

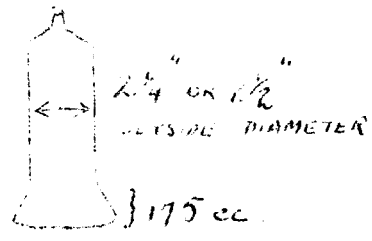
At present, through the courtesy of Dr. Levine, we have been able by using serum of a patient of this type (Group A) to test 269 of our donors. We hope to be able to do this routinely for all of the donors and arrangements are being made to hold a donor or two of this type on call. It is difficult as yet to maintain RH negative donors on the list at all times. The need for these donors arises out of the fact that in certain instances a RH negative mother may be immunized by a RH positive foetus and the anti RH immune bodies will act upon injected RH positive blood (as from the father) as if it were blood of the wrong blood group. There is some evidence that this process may occur also after repeated transfusions. Dr. Rhoads expressed the opinion that this discovery is one of major importance in the recent researches in hematology. Dr. Katzin and Dr. Levine were encouraged to proceed with their studies in this field and the availability of RH tested donors at the Bureau should prove of importance in selecting donors for pregnant or parturient women.

Report on Double Needle and Bottles

Dr. Unger showed the latest model of the double needle designed by him and made by the Becton Dickinson Company. The question of patenting it for the benefit of the Association was raised by Dr. Corwin.

Dr. Unger also read the following report on the subject of bottles:

"The Hospital Liquids Company furnished me with the following bottles (see illustration) for testing comparative yields of plasma to be obtained by sedimentation:



(1) Six straight sided bottles with a mushroom bottom
(2) Two straight sided 500 cc centrifuge bottles

"The following yields were obtained:

	500 cc Centrifuge Bottle	Hospital Liquids Haemovac	Mushroom Bottle $2\frac{1}{4}$" diam.	Mushroom Bottle $2\frac{1}{2}$" diam.	Dumb-bell
Blood	1100	5910	2770	2665	4330
Plasma	330	1900	950	1000	1830
% Yield*	30%	32%	34%	37.5%	42%

*Attention must be called to the fact that 50 cc of 5% sodium citrate was used and not 75 cc. The blood was allowed to sediment four days.

"The conclusions from my experience with the various bottles are as follows:

"Dumb-bell bottles give a higher yield of plasma than the others. Yet it must be pointed out that the dumb-bell bottles of blood selected for the above test were only bottles in which there was no clotting. This figure of 42% therefore does not take into account bottles of clotted blood which must be discarded in their entirety and which therefore yield no plasma. I have the feeling that this reduces the yield by about 3%. This clotting is due, I believe, to the narrowness of the central portion of the bottle. No clotting occurred in any of the other tests enumerated with the exception of the bottle with a 2" diameter.

"The centrifuge bottle tested cannot successfully serve a dual purpose. A higher yield is obtained by sedimentation if a special type sedimentation bottle is employed.

"Everything taken into consideration, a bottle shaped like the one illustrated above is the ideal bottle for sedimentation. The lower bulge (B in the illustration) should contain 200 cc of blood, the outside diameter of the balance of the bottle should be $2\frac{1}{2}$". The bottle should also be graduated, the mouth should have a standard screw cap and rubber stopper similar to the one now used by the Hospital Liquids Company for its Haemovac."

Dr. Scudder reported that fifty bottles of the modified dumb-bell design had been made by Mr. Mahoney and delivered to the Presbyterian Hospital where they are being tested. Dr. Scudder said that he will report on the bottles after the tests have been made.

Request from the Department of Health

Dr. Stetson read the following memorandum prepared by Dr. Bolduan, from the Department of Health:

"The next issue of the publication NEIGHBORHOOD HEALTH is being devoted to the subject of blood.

"The following signed articles have been prepared:

"Important Factors in the Causation of Anemia"
by Dr. C.C. Sturgis of the University of Michigan

"Leukemia" by Dr. Nathan Rosenthal of Mt. Sinai

"Pernicious Anemia"
by Dr. Paul Reznikoff of Cornell University Medical College

"Blood Transfusion" by Dr. Rufus Stetson of New York Hospital

"There will also be an article on the "History of Blood Transfusion" by Dr. Stetson and an article on the "Blood Transfusion Betterment Association" by Dr. Corwin.

"The usual 8-page issue will be increased to 12 pages in order to permit adequate presentation of the subject of blood transfusion.

"In order to pay for additional art work and extra copies of the bulletin, a grant of $50 from the Blood Transfusion Betterment Association is requested.

"Due acknowledgment of this aid will be printed in the bulletin."

In view of the fact that a great deal of useful information will be disseminated to other associations by means of this Health Department publication about blood transfusions,

It was voted to recommend that this request be granted.

Record Forms

Dr. Scudder showed a form prepared by Dr. Self and himself, a "Plasma and Serum Therapy Summary" to be filled out for each person given plasma or serum.

The form was considered very satisfactory.

The meeting adjourned at 6:30 p.m.

Recording Secretary